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September 8, 1998

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Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
Room 222, Mail Stop 1170  
1919 M Street, N.W.  
Washington, DC 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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Re: Our File 04982/040001  
ET Docket No. 98-80  
Comments of Interactive Technologies, Inc.

Dear Ms. Salas:

Enclosed are an original and four copies of the comments of Interactive Technologies, Inc. in the above-captioned proceeding.

Please contact the undersigned if you have any questions regarding this matter.

Very truly yours,



Keith A. Barritt

Enclosures

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
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In the Matter of )  
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1998 Biennial Regulatory Review --  
Conducted Emissions Limits Below  
30 MHz for Equipment Regulated  
Under Parts 15 and 18 of the  
Commission's Rules

ET Docket No. 98-80

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**COMMENTS OF  
INTERACTIVE TECHNOLOGIES, INC.**

Terry G. Mahn, Esq.  
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Counsel for Interactive Technologies, Inc.

September 8, 1998

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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To: The Commission

**COMMENTS OF  
INTERACTIVE TECHNOLOGIES, INC.**

Interactive Technologies, Inc. ("ITI"), by its counsel, hereby submits these comments in response to the Commission's Notice of Inquiry, FCC 98-102 (released June 8, 1998) ("NOI").<sup>1/</sup> ITI is a leading manufacturer and distributor of wireless security alarms systems used in homes and businesses and, over the years, has been active in many FCC proceedings involving the development of security alarm regulations.<sup>2/</sup> Currently, many thousands of

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<sup>1/</sup> The Commission extended the comment deadline in this proceeding to September 8, and thus these comments are timely. Order Granting Extension Of Time, DA 98-1499, ET Docket No. 98-80 (rel. July 28, 1998).

<sup>2/</sup> See, e.g., In The Matter Of Redevelopment Of Spectrum To Encourage Innovation In The Use Of New Telecommunications Technologies, ET Docket No. 92-9; Revision Of Part 15 Of The Rules Regarding The Operation Of Radio Frequency Devices Without An Individual License, Gen. Docket No. 87-389; In The Matter Of Amendment Of The Rules Regarding Control And Security Alarm Devices Under Part 15, Gen. Docket No. 86-422; In The Matter Of Amendment Of Part 15 Of FCC Rules To Provide For Remote Control And Security Devices, Docket No. 20990.

ITI security alarm systems are installed in both residential and industrial environments for life/safety protection. ITI products utilize carrier current technology in several system designs to improve system robustness and allow for optimal "zoning" of sirens and emergency lighting. Thus, ITI is intimately familiar with the special needs of the security alarm industry in this area and can offer a unique perspective in this proceeding.

ITI submits that Commission Rule 15.107 should be amended to allow for increased levels of conducted emissions for security alarm devices utilizing carrier current technology to transmit low duty cycle communications, just as Rules 15.231 and 15.35(b) permit higher radiated field strength limits for periodic operation of security alarm transmitters. Such a rule change would be consistent with the Commission's historic recognition of the public benefits of wireless alarm systems, would not result in any appreciable increase in potential interference to licensed services, and would facilitate the use of spectrally-efficient low duty cycle signalling technologies that have been developed by the wireless alarm industry.

**I. Relaxing The Conducted Emissions Limits For Low Duty Cycle Emitters In Security Alarm Systems Would Not Result In Harmful Interference And Would Be Consistent With Existing Commission Policies**

The Commission has asked whether "there are specific types of products that should be subject to different conducted emissions standards." NOI at ¶ 11. ITI submits that low duty cycle security alarm devices are products that should be subject to relaxed standards due to the tremendous public benefits they provide and their negligible threat of harmful interference.

**A. Low Duty Cycle Emitters In Security Alarm Systems Do Not Pose Unacceptable Risks Of Interference**

Carrier current signalling used in ITI's security alarm systems send low duty cycle signals (FM, frequency shift keyed) of short duration (2 msec) and relatively narrow bandwidth (30 kHz) for safety and/or emergency-related operations. These low duty cycle emissions do not threaten AM radio reception as they are intermittent in nature. Moreover, they are at low power as compared to the noise on power lines, orders of magnitude higher, from a host of ubiquitous incidental radiators that are not currently regulated by the Commission, including dimmer switches and brush motor devices. Thus, even if there were a marginal increase in conducted signal levels from security alarm devices, it would not be noticeable in the current environment.

**B. Higher Conducted Emissions Limits For Low Duty Cycle Emitters In Security Alarm Systems Would Be Consistent With The Commission's Existing Policies**

The Commission has long recognized the public benefit of security alarm systems by affording them special allowances under the rules. Rule 15.231, for example, authorizes relatively high field strength limits for "periodic operating" intentional radiators used in security systems because of the immeasurable protection of life and property they provide at little risk of interference to other spectrum users. The same rationale favors relaxing the limits for conducted emissions for these same systems utilizing carrier current technology.

Encouraged by the relaxed radiated emissions limits and the measurement allowances provided for duty cycle operations (Rule 15.35), the security alarm industry has, over the years, developed sophisticated low duty cycle signalling technology that avoids interference

to licensed services. The same technology is used in the carrier current "component" of these systems. However, the existing rules do not provide a similar allowance for duty cycle operations. Without such allowances, there is no incentive to designing carrier current systems that use low duty cycle rather than continuous emissions. ITI submits the Commission's rules should be amended to create such incentives to use low duty cycle emitters in security alarm systems, in recognition of the non-interfering nature of such devices.

## **II. Relaxing The Conducted Emissions Limits For Low Duty Cycle Emitters In Security Alarm Systems Would Be Consistent With Other U.S. Standards**

The Commission has asked whether it should "consider other product requirements, such as electrical safety, in adjusting the conducted emissions limits." NOI at ¶ 11. ITI submits that the National Fire Prevention Association ("NFPA") standard for fire alarm signalling (NFPA-72) provides sufficient reason for relaxing the conducted emissions limits for security alarm devices.

The current version of NFPA-72 requires that residential fire alarm systems achieve defined noise thresholds in all sleeping quarters (see Exhibit 1). As a result, alarm systems are now required to send signals in a given household to multiple annunciators at considerable distances from the control panel, rather than simply to a single annunciator in close proximity to the control panel as was previously allowed. To overcome the noise on the power line from unregulated incidental radiators described above, ITI's low frequency (250 kHz) signals must be sent at approximately 5V RMS; yet to meet the Commission's 1000 uV limit for spurious emissions in the AM band, ITI is required to reduce its out of

band energy by 74 dB -- a difficult and costly feat to achieve. Even when employing expensive filtering these limits sometimes cannot be met, requiring the installation of dedicated wiring that adds to system complexity and cost to homeowners. Because the Commission's regulations create a direct impediment to meeting the safety standards of NFPA-72 for residential alarm signalling, they should be amended as requested herein.<sup>3/</sup>

### **III. Conducted Emissions Limits For Low Duty Cycle Emitters In Security Alarm Systems Are Unnecessary**

The Commission has asked whether the "Part 15 . . . conducted emissions limits [are] still necessary." NOI at ¶ 9. ITI submits that such limits have never been necessary for low duty cycle carrier current devices, particularly because such devices are subject to redundant radiated emissions limits which adequately protect AM radio.

#### **A. There Is No Evidence In The Record Of The Need For Conducted Emissions Limits On Carrier Current Low Duty Cycle Emitters**

There has never been a clear need for conducted limits for carrier current emitters operating below 30 MHz. The existing limits arose only after the Consumer Electronics Group of the Electronic Industries Association ("EIA/CEG") petitioned the Commission in 1991 to amend Part 15 specifically to include carrier current systems operating below

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<sup>3/</sup> The Commission has also asked for commenters to "describe the benefits of changing the rules to conform with international standards." NOI at ¶ 11. As the United States moves towards a Mutual Recognition Agreement and harmonization with Europe in many product areas, ITI submits that the Commission should harmonize its AM receiver standards with EN 55020, which requires receivers to be less susceptible to RF interference than do current U.S. regulations.

450 kHz in the exemption from the general conducted emissions limits which, as written, applied only to systems operating within the 450-1705 kHz band.<sup>4/</sup> In the resulting rulemaking, the Commission admitted that "there had been no intent to exclude carrier current systems operating below 450 kHz" from the exemption, that the failure to include such systems in the exemption was "simply an oversight in crafting the regulations," and that since radiated signals are the principal cause of interference "power line conducted emissions requirements were deemed unnecessary."<sup>5/</sup>

Only one party, Echelon Corporation, responded (with late-filed comments) to the EIA/CEG petition, submitting a technical study the Commission described as "purport[ing]" to show that EIA/CEG's system would result in harmful interference.<sup>6/</sup> EIA/CEG offered a study demonstrating that no interference occurs in the AM band when carrier current conducted emissions are below 1000 uV, and this limit was then adopted by the Commission without significant objection. However, the Commission acknowledged that neither study addressed whether the Commission's radiated emission limits alone were already sufficient to control the interference that might occur due to conduction of RF signals through the AC

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<sup>4/</sup> In The Matter Of Amendment Of Part 15 To Enable The Widespread Implementation Of Home Automation And Communications Technology, Notice of Proposed Rulemaking, ET Docket No. 91-269, 6 FCC Rcd 5409 (1991) ("Home Automation NPRM").

<sup>5/</sup> Home Automation NPRM, 6 FCC Rcd at 5410, ¶ 7.

<sup>6/</sup> The National Association of Broadcasters was evidently not concerned enough with the risk of interference to file comments, and only became involved in the reply phase of the proceeding.



power lines.<sup>2/</sup> In addition, these studies dealt with continuous emitters and did not take into account low duty cycle systems that are far less prone to causing RF interference. ITI submits, therefore, that in the absence of a definitive study on this issue the rules should never have applied to low duty cycle emitters in carrier current systems and should now be amended to allow for increased levels of conducted emissions from such devices used in security alarm systems.

**B.     The Market Does Not Require Strict Conducted Emissions Limits On Carrier Current Low Duty Cycle Emitters**

The Commission has a long history of regulating emissions as a means of preventing interference to AM radio reception. However, the greatest threat to AM radio is interference from unregulated incidental radiators such as dimmers and brush motors -- products that do not use RF to communicate and contribute nothing to the environment other than unwanted noise. Interference caused by conducted emissions from regulated sources -- which provide beneficial communications -- is not nearly as widespread or significant, particularly in the case of low duty cycle emitters. Furthermore, the Commission's emissions policies should reflect the growth and potential of new radio technologies, including satellite (DARS), cable, and the Internet, in addition to standard FM broadcasting, which offer other options for broadcast reception. All these technologies reduce the need for continued strict conducted emissions limits on carrier current devices to protect AM communications.

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<sup>2/</sup>     Home Automation NPRM, 6 FCC Rcd at 5409-10, ¶¶ 4, 8; In The Matter Of Amendment Of Part 15 To Enable The Widespread Implementation Of Home Automation And Communications Technology, Report and Order, 70 RR2d 1460 (1992).

ITI has devoted considerable resources to develop products that comply with Commission regulations, yet it is familiar with many other consumer carrier current products on the market that do not comply. The commercial reality is that the conducted emissions limits are routinely ignored, or at best misunderstood as not applying to many types of products. Rather than pronounce that the conducted emissions limits are to be stringently enforced and thereby disturb the carrier current marketplace that has grown without limits, ITI urges the Commission to begin a rulemaking instead to clarify for which products the limits apply, and to relax the limits specifically for low duty cycle security alarm emitters.

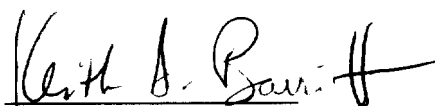
#### **IV. ITI's Proposed Amendments To The Commission's Rules**

Based on the foregoing reasons and to maintain regulatory "symmetry" for low duty cycle security alarm devices, ITI recommends that Rule 15.107 be amended to allow carrier current emissions as follows:

- 1) conducted emissions limits should be specified in average, rather than quasi-peak, for low duty cycle emitters used in security alarm systems to allow for the non-interfering nature of low duty cycle emissions;
- 2) the 20 dB peak-to-average limit set forth in Rule 15.35(b) should be applicable to conducted emissions from low duty cycle emitters used in security alarm systems, as there is no technical or regulatory justification for differentiating between radiated and conducted alarm signalling; and
- 3) supervisory signalling should be recognized as an essential element of carrier current alarm systems subject to the above amendments.

The foregoing amendments will be consistent with the Commission's recognition of the value and importance of wireless security alarm systems and will not appreciably increase potentially harmful interference to licensed services. Accordingly, ITI urges the Commission to issue a Notice of Proposed Rulemaking to adopt these amendments without delay.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Keith A. Barritt", with a stylized flourish at the end.

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Keith A. Barritt, Esq.  
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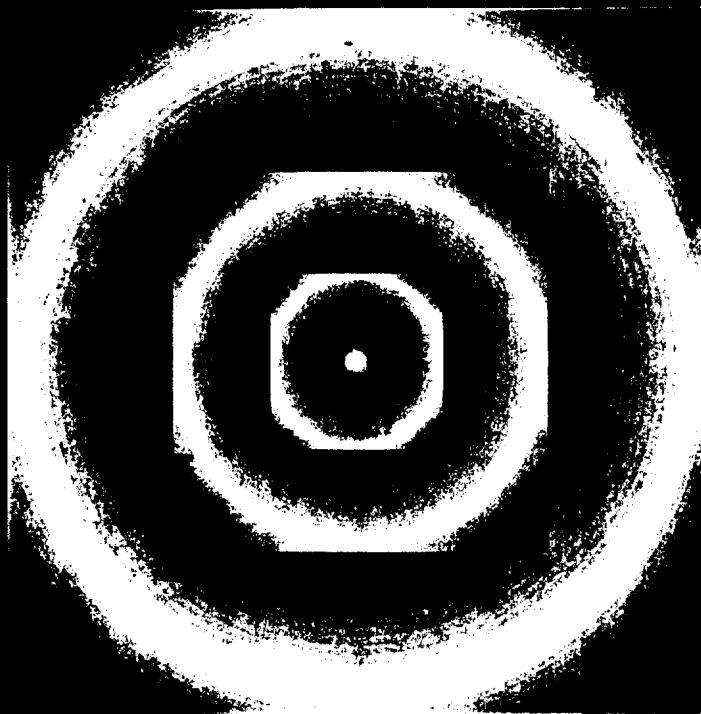
Counsel for Interactive Technologies, Inc.

September 8, 1998

90280.W11

# National Fire Alarm Code

1996 Edition



**National Fire Protection  
Association**

**An International Codes and Standards Organization**

## Chapter 6 Notification Appliances for Fire Alarm Systems

### 6-1 Scope.

**6-1.1 Minimum Requirements.** This chapter covers minimum requirements for the performance, location, and mounting of notification appliances for fire alarm systems for the purpose of evacuation or relocation of the occupants.

**6-1.2 Intended Use.** These requirements are intended to be used with other NFPA standards that deal specifically with fire alarm, extinguishment, or control systems. Notification appliances for fire alarm systems add to fire protection by providing stimuli for initiating emergency action.

**6-1.3** All notification appliances or combinations thereof installed in conformity with this chapter shall be listed for the purpose for which they are used.

**6-1.4** These requirements are intended to address the reception of a notification signal and not its information content.

**6-1.5 Interconnection of Appliances.** The interconnection of appliances, the control configurations, the power supplies, and the use of the information provided by notification appliances for fire alarm systems are described in Chapter 1 and Chapter 3.

### 6-2 General.

#### 6-2.1 Nameplates.

**6-2.1.1** Notification appliances shall include on their nameplates reference to electrical requirements and rated audible or visible performance, or both, as defined by the listing authority.

**6-2.1.2** The audible appliances shall include on their nameplates reference to their parameters or reference to installation documents (supplied with the appliance) that include the parameters in accordance with 6-3.2. The visible appliances shall include on their nameplates reference to their parameters or reference to installation documents (supplied with the appliance) that include the parameters in accordance with 6-4.2.1.

**6-2.2 Physical Construction.** Appliances intended for use in special environments (e.g., outdoors versus indoors, high or low temperatures, high humidity, dusty conditions, hazardous locations) or where subject to tampering shall be listed for the intended application.

**6-2.3\*** Where subject to obvious mechanical damage, appliances shall be suitably protected. Where guards or covers are employed, they shall be listed for use with the appliance. Their effect on the appliance's field performance shall be considered in accordance with the listing requirements.

**6-2.4** In all cases, appliances shall be supported independently of their attachments to the circuit conductors.

### 6-3 Audible Characteristics.

#### 6-3.1 General Requirements.

**6-3.1.1 Audibility.** The sound level of an installed audible signal shall be adequate to perform its intended function and shall meet the requirements of the authority having jurisdiction or other applicable standards.

**6-3.1.2** An average sound level greater than 105 dBA shall require the use of a visible signal appliance(s) in accordance with Section 6-4.

**6-3.1.3** The total sound pressure level produced by combining the ambient sound pressure level with all audible signaling appliances operating shall not exceed 120 dBA anywhere in the occupied area.

**6-3.1.4** Sound sources not normally found continuously in the occupied area shall not be required to be considered in measuring maximum ambient sound level.

**6-3.1.5 Mechanical Equipment Rooms.** Where audible appliances are installed in mechanical equipment rooms, the average ambient sound level used for design guidance shall be at least 85 dBA for all occupancies.

#### 6-3.2\* Public Mode Audible Requirements.

**6-3.2.1** Audible signal appliances intended for operation in the public mode shall have a sound level of not less than 75 dBA at 10 ft (3 m) or more than 120 dBA at the minimum hearing distance from the audible appliance.

**6-3.2.2\*** To ensure that audible public mode signals are clearly heard, they shall have a sound level at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 ft (1.5 m) above the floor in the occupiable area.

#### 6-3.3 Private Mode Audible Requirements.

**6-3.3.1 Private Mode.** Audible signals intended for operation in the private mode shall have a sound level of not less than 45 dBA at 10 ft (3 m) or more than 120 dBA at the minimum hearing distance from the audible appliance.

**6-3.3.2** To ensure that audible private mode signals are clearly heard, they shall have a sound level at least 10 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 ft (1.5 m) above the floor in the occupiable area.

**6-3.4 Sleeping Areas.** Where audible appliances are installed to signal sleeping areas, they shall have a sound level of at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds or a sound level of at least 70 dBA, whichever is greater, measured at the pillow level in the occupiable area.

#### 6-3.5 Location of Audible Signal Appliances.

**6-3.5.1** Where ceiling heights allow, wall-mounted appliances shall have their tops at heights above the finished floors of not less than 90 in. (2.30 m) and below the finished ceilings of not less than 6 in. (152 mm). This requirement shall not preclude ceiling-mounted or recessed appliances.

*Exception.* Combination audible/visible appliances installed in sleeping areas shall comply with 6-4.4.3.

**6-3.5.2** Where combination audible/visible appliances are installed, the location of the installed appliance shall be determined by the requirements of 6-4.4.

*Exception.* Where the combination audible/visible appliance serves as an integral part of a smoke detector, the mounting location shall be in accordance with Chapter 2.